

In Remembrance



The Crew of STS-107

(L to R) Mission Specialist David Brown, Commander Rick Husband, Mission Specialists Laurel Clark, Kalpana Chawla and Michael Anderson, Pilot William McCool and Payload Specialist Ilan Ramon.

*Eternal Father, King of birth,
Who didst create the heaven and earth,
And bid the planets and the sun
Their own appointed orbits run;
O hear us when we seek thy grace
For those who soar through outer space.*

...from the Navy Hymn.



From the Chairman...

As we move into this part of our Section year, business is picking up in many areas. During January we co-sponsored a Tactical Missile Design Symposium held at the University of Alabama in Huntsville. The books are still open, but the Section expects to net over \$5,000 for its Engineering Scholarship from such efforts. Special thanks goes to Syri Koelfgen, Victor Giuliano, Alan Lowrey, and Earl Pearce for helping with this activity.

The Nominating Committee has begun its work toward obtaining candidates for officers and open director positions for our annual election. Walter Hammond (256-544-0584, Walter.E.Hammond@msfc.nasa.gov) is the chairman of the committee, and would welcome any inputs you might have about possible candidates. Other committee members are:

Todd Honeycutt, 256-430-0753, thoneycutt@stslc.com,
John Lassiter, 256-544-3022, john.o.lassiter@msfc.nasa.gov
Bob Noblitt, 256-461-1993, BobNoblitt@msn.com,
Wanda Reece, 256-544-2630, wanda.reece@msfc.nasa.gov.

John London's team at MSFC is at work on display and operational replicas of Robert Goddard's first successful liquid-fueled rocket. This is very appropriate project for the Huntsville, AL area (Rocket City, USA), and exciting for all who are involved.

Steve Noneman, our Honors and Awards Director, is active in several areas. He is identifying candidates for upgrade to Associate Fellow grade, and encouraging them to apply; and is involved in identifying and nominating Section members for awards from AIAA HQ. It is also time to begin thinking about nominating members for our annual Section awards. When a solicitation is made for nominees, consider those members that you know and provide Steve with names of those whom you consider viable candidates. It is not possible for an awards committee to know the qualifications of all Section members. So we need inputs from YOU.

For those of you who might be interested in being a judge at this year's Moonbuggy Race, the race is to be held on 11-12 April. Alfred Wright will be soliciting volunteers, so mark your calendar if you are interested.

Enclosed is an announcement for the New Advancements in Key Aerospace Technologies seminar series sponsored by the Section. A distinguished group of lecturers will be presenting these seminars, so make plans to attend.

And finally, we're making progress on updating our Website (www1.msfc.nasa.gov/aiaa/).

I look forward to seeing you at dinner on 21 February.

--Arloe Mayne

AIAA National Elections

The ballots for the 2003 AIAA Elections will be sent to all eligible voters during February. The ballots will arrive in an envelope marked "Ballot Enclosed". They will not be delivered with your Aerospace America as in past years. Please mark and return your ballots.

The deadline for receipt of the completed ballot at AIAA Headquarters is 26 March 2003.

Honors & Awards Manual is Online!

Check deadlines, past recipients, and award scopes online on the new online Honors and Awards Manual. These pages will allow you to search only the awards you are looking for without having to download the whole manual. Soon to follow is a search feature that will enable you to look up award information by recipient or award.

Nominations for Membership Upgrades

Associate Fellow candidates shall be persons who have accomplished or been in charge of important engineering or scientific work, or who have done work of outstanding merit or have otherwise made outstanding contributions to the arts, sciences, or technology of aeronautics or astronautics. Nominees must be AIAA Senior Members and have at least twelve (12) years of professional experience.

Fellow candidates are recognized for their professional integrity, effectiveness, and efficiency in leadership of organizations that have conducted pioneering or complex programs, or have made noteworthy contributions to the field of aeronautical or astronautical education.

Honorary Fellow candidates are persons of eminence in aeronautics or astronautics, recognized for their long and highly contributive careers in the art, science, or technology, thereof.

Senior Members shall be persons who have demonstrated a successful professional practice in the arts, sciences, or technology of aeronautics or astronautics for the equivalent of at least eight (8) years.

Associate Fellow nominations forms are due 15 April 2001 and reference are due 15 May 2001. Fellow and Honorary Fellow nominations are due to AIAA HQ by 15 June 2001 and references are due by 15 July 2001. Members may apply for Senior Member grade at any time during the year. To request upgrade information and nomination forms, please contact AIAA Customer Service at 800/639-AIAA or 703/264-7500 or visit our web site at www.aiaa.org.

Congratulations our new Senior Members:

**Lawrence Thomas
Deborah B. Underwood**

AIAA Alabama-Mississippi Section February Dinner Meeting

Date: Friday, February 21, 2003

Time: Social Hour at 5:00pm. Dinner at 6:00pm

Location:

The Huntsville Marriott Hotel
5 Tranquility Base
Huntsville, Alabama
(next to the US Space and Rocket Center)

Cost: \$20.00 (\$10.00 for students)

RSVP:

Mr. Tom Hancock

E-mail (preferred): tom.hancock@msfc.nasa.gov

Telephone: 256-961-4002

Please make reservations (or cancellations)

By 12:00 noon on Wednesday, February 19.



Horten HO-229 Flying Wing

Our Speaker:

Mr. Bruno L. Cavallo

Retired, US Naval Air Warfare Center; Veridian Engineering

Our Topic:

Advanced, Experimental and Conceptual German Aircraft 1936-1945

The ME 262 jet fighter, the ME 163 rocket powered fighter, the ME 264 long range jet bomber, the Ba 349 Nattier vertical launched rocket interceptor fighter, the Horten V flying wing, and MORE....!!

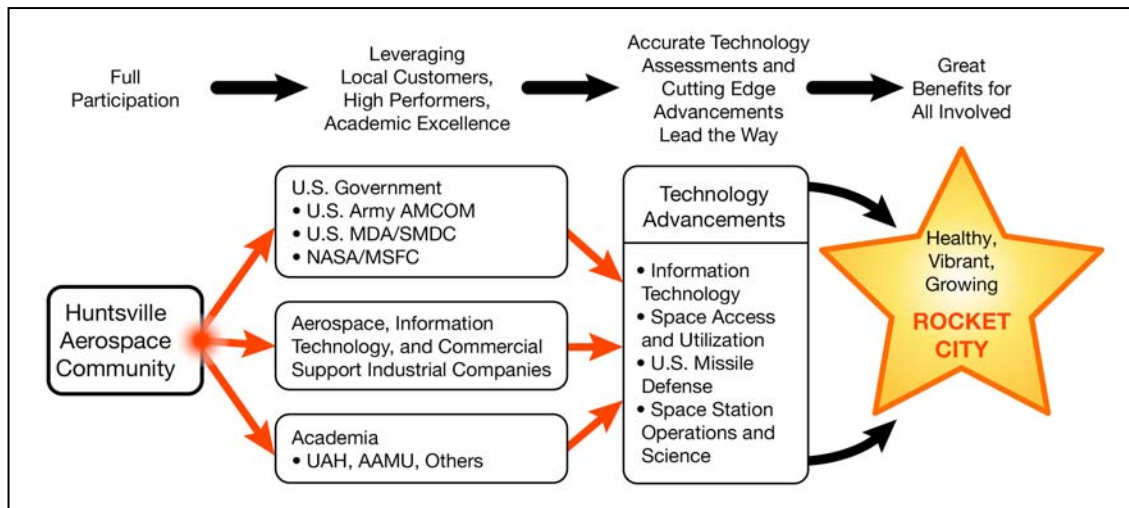
Mr. Cavallo received his BS degree in Aeronautical Engineering from the Polytechnic Institute of Brooklyn in 1957 and MS degrees in Aeronautical Engineering and Engineering Management from Drexel University in 1960 and 1974, respectively. He retired from the Aircraft Division of the US Naval Air Warfare Center in 1994 as a senior manager for systems analysis. He then became a consultant for Veridian Engineering for seven years. During 2000-2001, he served as a member of the Curriculum Advisory Committee for the Mechanical Engineering Department of Villanova University.

Mr. Cavallo has over 40 years experience in Navy warfare and operations analysis, aircraft systems requirements and performance analysis, air systems concepts and technologies assessment, systems cost-effectiveness analysis, and naval war gaming. He has served as a senior analyst for NATO Long Term Scientific Studies of future aircraft systems and ship concepts, and for the study of NATO Maritime Operations and Applicable Technologies for 2015.

Mr. Cavallo is a 45-year member and Associate Fellow of the AIAA, a past member of the AIAA Lighter-Than-Air Committee, and twice Past Chairman of the Greater Philadelphia Section. In 1999 he served as the AIAA Region 1 Deputy Director for Career Enhancement. He received the AIAA Space Shuttle Flag Award in 1984, and the AIAA National Public Policy Award for the Greater Philadelphia Section in 1992.

AIAA SEMINAR SERIES

NEW ADVANCEMENTS IN KEY AEROSPACE TECHNOLOGIES



A **four** seminar series on the latest key technologies that are advancing aerospace enterprise on all fronts.

Saturday, February 22nd & March 1st, 8th, and 15th, 2003

UAH Technology Hall, room S105.

Registration begins at 8:30 am. Sessions from 9:00 am to 12:00 noon.

February 22. Overview. Session to include: Synergy and interdependence among members of the Greater Huntsville technical community. Short history of the growth, resilience, and ability of the community to rapidly adapt to change. Discussion on assessing the Advancement Degree of Difficulty (AD2) for new technologies or low Technology Readiness Levels (TRL) from their current TRL to the required TRL. **Information Technology (IT).** Session to include: Computing, software; the exploding, enabling field of information technology. The digital age, marked by both electronic hardware progression and by an explosion of access to vast expanses of information. Internet impact on aerospace. And much more...

March 1. Space Transportation and Access to Space. NASA's current plans and intentions for future technology directions will be discussed in detail in this session. Topics will include NASA propulsion technology projects under the Integrated Space Transportation Program (ISTP) and next generation launch technologies (NGLT) programs (e.g. advanced rocket engines and hypersonics/air breathing; and turbine & rocket based combined cycle propulsion systems), development of the Orbital Space Plane, and continuous upgrades and improvements for the World's only existing reusable launch vehicle, the Space Shuttle. Discussions on advanced propulsion technology impact on global launch vehicle market.

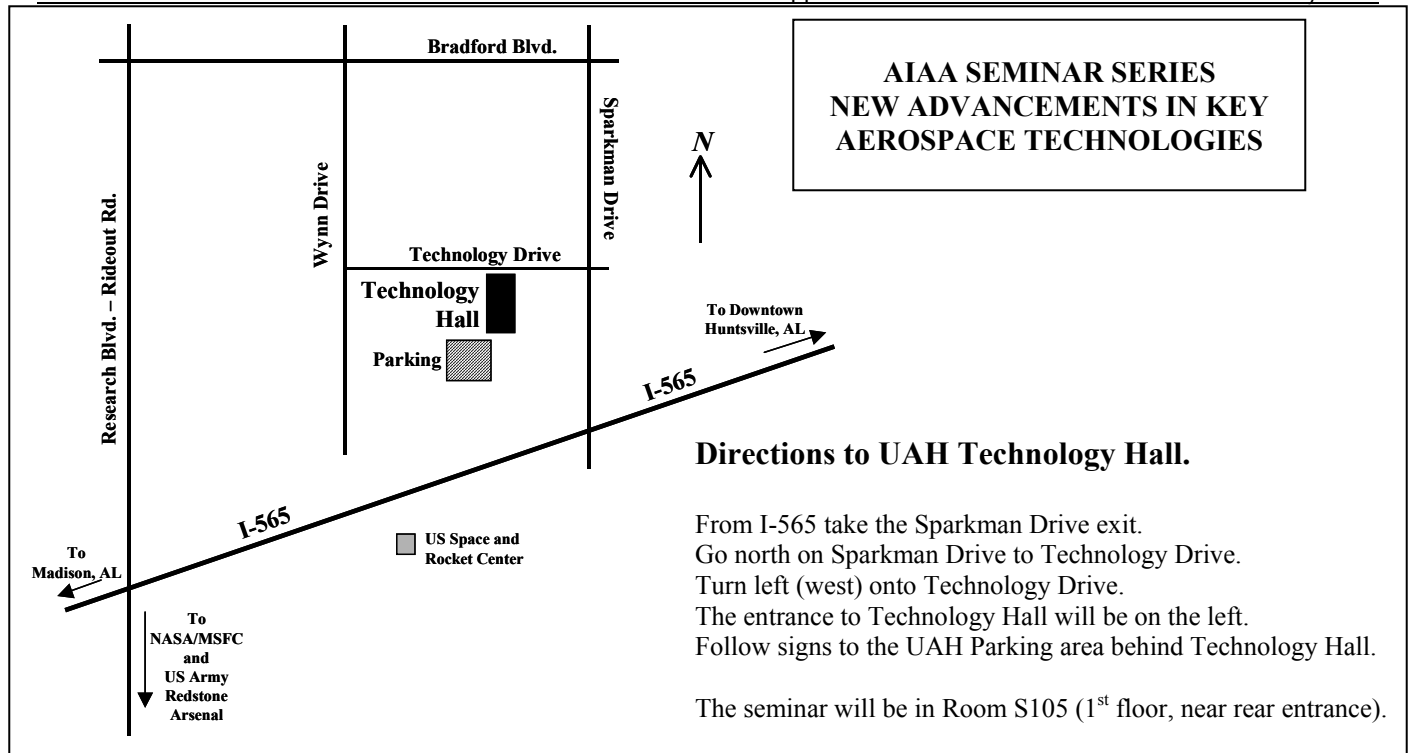
March 8. U.S. Missile Defense Program. The U.S. Army Space and Missile Defense Command (SMDC) is an important part of the National Space and Missile Defense Program. SMDC is Commander of Army Forces for computer network operations, providing command and control of Army Space Forces; developing technology, conducting experiments and tests, and fielding assigned space and missile defense systems. SMDC plays a leading role in supporting the Missile Defense Agency (MDA). A number of local aerospace firms (Teledyne Brown, TRW/Northrop-Grumman, Mevatec, COLSA, Boeing, Lockheed-Martin and many others) are major SMDC contractors. This session will address several SMDC key defense activities.

March 15. Space Station Operations Technologies and Future Space Science Plans. This session will present an overview of and describe the key operations technologies, engineering activities and planned future science activities that will occur on the International Space Station (ISS) after it achieves full configuration and operational status. Topics will include payload systems concept and requirements definitions, operations integration and implementation, flight and ground crew training and console operation, data processing and data flow planning, timeline engineering, pre-mission and mission support planning, end-to-end flight to ground systems analyses and evaluation, world wide networking. And much more...

Fees: \$40 per session or \$140 for all four sessions. \$25 seminar fee for students & retirees.

Make checks payable to: AIAA AL-MS Section, P.O. Box 7208, Huntsville, AL 35807.

For information & reservations, contact Mr. John Lassiter at 256-544-3022 (john.o.lassiter@msfc.nasa.gov)



6th Military and Aerospace Programmable Logic Devices (MAPLD) International Conference

9-11 September 2003

*Ronald Reagan Building and International Trade Center
Washington, DC*

***** Co-hosted by AIAA and NASA Office of Logic Design *****

Abstract Deadline: 25 April 2003

Abstracts are being accepted for the 6th Military and Aerospace Programmable Logic Devices (MAPLD) International Conference. Programmable devices, technologies, and related aspects of digital engineering will comprise the major emphasis of this conference. This year, there will be a special emphasis on papers with the following themes:

- Reliability of Hardware and Designs; Fault Tolerance
- Reconfigurable/Adaptive Computing Systems
- Long-term Space Missions: > 15 Years
- Hardware and Software: The Line is Blurring
- Radiation Hardening by Design
- Digital Signal Processing with Programmable Devices
- Design Security
- War Stories and Lessons Learned

Two full-day seminars will be offered.

- 1) Advanced Design:
**Digital Signal Processing,
Programmable Device Architecture,
and Military/Aerospace Applications.**
- 2) Reconfigurable Computing:
FPGA-Based, General Purpose, High
Performance Systems.

And our distinguished panel will discuss,
"Why Is Software So Hard?"

The Technical Program will consist of technical paper presentations and a poster session. We are planning an exciting program with several special invited speakers, including the annual **Invited History** talk. Select papers will be published in the AIAA Journal of Spacecraft and Rockets. This conference is open to both foreign participation and U.S. citizens and is unclassified. Authors can obtain conference information by visiting <http://klabs.org/mapld03>. Papers should be sent to, along with questions, to mapld2003@klabs.org.



Helicopter Aerodynamics Without Equations

UAH Professional Development Engineering Technology Symposium

March 10 • 8:30am-4:30pm • \$425 or \$375 for AHS Members • UAH University Center Exhibit Hall

UAH Professional Development in cooperation with the Redstone Chapter of AHS International, The Vertical Flight Society, is honored to present this comprehensive one-day symposium! The course material covers the basic principles of helicopter performance and flying qualities and is applicable to both unmanned aerial vehicles and manned rotorcraft systems. Taught by the World Renowned Aerodynamicist, Raymond W. Prouty, this informative symposium is for the beginner as well as the practicing helicopter aerodynamicist.

Helicopter Aerodynamics Without Equations TOPICS



Hover Performance

- Included velocity and power required as a function of disk loading
- Optimizing the Figure of Merit using solidity variations
- The effect of blade twist
- How the hovering rotor makes its own gusty air
- Ground effect

Vertical Flight Performance

- States of flow
- Power required to climb
- Main and tail rotors in the vortex-ring state
- Vertical autorotation

Forward Flight Flying Qualities

- Trimming the helicopter stat
- Changing power conditions
- Speed stability
- Effect of center-of-gravity position
- The phugoid mode
- Dihedral effect
- Dutch rolls and spiral dives
- The aerodynamic environment at the empennage and tail rotor
- Change of main rotor torques in rolls
- Cross-coupling

Hover Flying Qualities

- What makes a hovering helicopter unstable?
- Ways to provide stability
- Effect of hinge offset on controllability
- Desired response characteristics
- Lateral trim

Forward Flight Performance

- Momentum considerations for power required
- Parasite drag estimating
- Selecting speed for best range or endurance
- Blade element considerations
- Induced velocity distribution
- Retreating blade stall and advancing blade compressibility
- Rotor-lift-to-drag ratio
- Flapping and feathering
- Trimming the helicopter
- Limits of forward speed and load factor
- Choosing an airfoil
- Autorotation in forward flight
- Ground effects in forward flight
- Sideways and rearwards flight considerations

(Registration fee includes materials, continental breakfast and lunch!)

Seating is limited! Register by February 28! Contact our Business Office at 256.824.6010 or 1.800.448.4031, or register online at our website, www.coned.uah.edu.

We accept American Express, MasterCard, VISA, Discover, or your company P.O.

Non-AHS Member - #23030231B @ \$425

AHS Members - #23030304B @ \$375

Helicopter Aerodynamics Without Equations

UAH Professional Development Engineering Technology Symposium

March 10, 2003 • Monday • 8:30am-4:30pm

Location: UAH University Center Exhibit Hall

(Your Fee includes materials, continental breakfast and lunch!)

INSTRUCTOR : RAYMOND W. PROUTY

Raymond W. Prouty is a world renowned helicopter aerodynamicist. For almost four decades, he gained and subsequently used his rotary-wing expertise at Hughes Helicopters (now Boeing), Sikorsky Aircraft, Bell Helicopter, Lockheed, and back to Hughes before retiring in 1987. His work ranged from preliminary design to performance and flying-qualities analysis to windtunnel and flight testing. Named an Honorary Fellow of the American Helicopter Society in 1983, he holds a Masters degree in Aeronautical Engineering from the University of Washington. Now an independent consultant, Mr. Prouty continues to unravel the mysteries of helicopter flight to others through college courses, private consulting, and publications. Current columnist for Rotor & Wing and author of many publications, his contributions to the understanding of rotor wing flight are legendary within the aviation community.



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The University of Alabama in Huntsville

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2000-2001 Section Chair	Robert (Bob) L. Sackheim	256/544-1938	bob.sackheim@msfc.nasa.gov

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